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| 10/077,639 | 02/15/2002 | Hidekazu Shirakawa | NEC 01FN073 | 5470 |

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| EXAMINER |
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PATEL, GAUTAM

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| ART UNIT | PAPER NUMBER |
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2656

DATE MAILED: 03/02/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/077,639

Applicant(s)

SHIRAKAWA ET AL.

Examiner

Gautam R. Patel

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 July 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 is/are pending in the application.
- 4a) Of the above claim(s) 5-9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4, 10 and 11 is/are rejected.
- 7) ☒ Claim(s) 12 and 13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>9/20/05</u> | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment:

1. This is in response to amendment filed on 7-25-05.
2. Claims 1-13 are pending in the application. remain for examination. Claims 5-9 were withdrawn as non-elected. Action on claims 1-4 & 10-13 follows.
NOTE: Applicants are urged to cancel non-elected claims. 5-9.
3. Applicant's arguments regarding objection of drawings has been considered in light of amendment the objection to drawings has been withdrawn.

Claim Rejections - 35 U.S.C. § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

Claims 1-2, and 10-11 are rejected under 35 U.S.C. § 102(e) as being anticipated by Kikuchi et al., US. Patent 6,353,582 (hereafter Kikuchi).

As to claim 1, Kikuchi discloses the invention as claimed [see Figs. 1 and 4-5] including an objective lens, a signal detector and a thickness error detector, comprising:

an objective lens [fig. 1, unit 14] for condensing light for recording or reproducing information on said recording layer [fig. 1, unit 15] via a transparent substrate [fig. 1, unit 15's transmission substrate] of the optical disk [col. 2, line 61 to col. 3, line 13; col. 5, lines 14-48];

a signal detector [fig. 4, units 31-34 & FE1 & FE2] for detecting focus error signals and focus sum signals from return light reflecting from said recording layer [col. 2, line 61 to col. 3, line 13; col. 5, lines 14-48]; and

a thickness error detector [fig. 4, units 33, 36, 38-39] for detecting thickness errors [Thickness error signal TH] of said transparent substrate with reference to a specified value,

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based on the characteristics of said focus error signals [col. 2, line 61 to col. 3, line 13; col. 4 lines 3-45].

5. The aforementioned claim 2, recites the following elements, inter alia, disclosed in Furukawa:

an objective lens [fig. 1, unit 14] for condensing light for recording or reproducing information on said recording layer [fig. 1, unit 15] via a transparent substrate [fig. 1, unit 15's transmission substrate] of the optical disk [col. 2, line 61 to col. 3, line 13; col. 5, lines 14-48];

a signal detector [fig. 4, units 31-34 & FE1 & FE2] for detecting focus error signals and focus sum signals from return light reflecting from said recording layer [col. 2, line 61 to col. 3, line 13; col. 5, lines 14-48]; and

a thickness error detector [fig. 4, units 33, 36, 38-39] for detecting thickness errors [Thickness error signal TH] of said transparent substrate with reference to a specified value, based on the characteristics of said focus sum signals [col. 2, line 61 to col. 3, line 13; col. 4 lines 3-45].

6. The aforementioned claim 10, recites the following elements, inter alia, disclosed in Kikuchi:

a spherical aberration compensator [fig. 1, unit 13] for compensating for spherical aberration caused by the thickness error of said transparent substrate placed on said signal detector's optical path [col. 5, lines 41-48].

7. As to claim 11, it is rejected for the same reasons set forth in the rejection of claim 10, supra.

Claim Rejections - 35 U.S.C. § 103

8. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-4 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Kikuchi as applied to claims 1-2 above in view of Tateishi et al., US. patent 6,584,048 (hereafter Tateishi).

As to claim 3, Kikuchi discloses all of the above elements, including aberration correction caused by the thickness variations of the transmission [transparent] substrate and detection of focus error signal and focus sum signals. Furukawa does not specifically disclose that these are detected by the well known knife-edge method to the extent claimed.

However, knife-edge method has been well known in the art for a long time [see US patent 4,533,826 or US 4,974,220]. Also Tateishi clearly discloses:

that focus error signal and focus sum signals can be detected by knife-edge method and spot-size method or knife-edge method can be used alternatively [col. 10, lines 29-61 and fig. 5B]; and

said thickness error detector detects the thickness error of said transparent substrate and its symbol based on differences in the absolute value between the positive peak and negative peak of said focus error signals [col. 10, lines 29-61 and fig. 5B].

Both Kikuchi and Tateishi are interested in improving the focus error detection mechanism in an optical disk device.

One of ordinary skill in the art at the time of invention would have realized that the system of Kikuchi would be sensitive vibration of the disc surface and any extraneous noise would have compromised the quality of the electrical signals.

Therefore, it would have been obvious to have used a knife-edge method in the system of Kikuchi as taught by Tateishi because one would be motivated to reduce noise in the system of Kikuchi and provide better signal controls and improve quality of the signal and provide over all better control of the system [col. 2, lines 14-21; Tateishi].

9. The aforementioned claim 4, recites the following elements, inter alia, disclosed in Tateishi:

said signal detector detects said focus error signals and said focus sum signals by means of the knife-edge method; and said thickness error detector detects the thickness error of said

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transparent substrate or its symbol based on differences between the peak point of said focus sum signal and the zero point of said focus error signal in their focus positions [col. 10, lines 29-61 and fig. 5B].

Allowable Subject Matter

10. Claims 12-13 are objected as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

NOTE: Claims 12-13 are allowable over the prior art of record since the cited references taken individually or in combination fails to particularly disclose an optical disk device which includes a controller for calculating a compensating factor for the spherical aberration “at each radial position of the disk based on the thickness errors of the transparent substrate detected at various radial positions on the optical disk prior to recording or reproducing information, and causing the spherical aberration compensator to compensate based on the compensation factors during recording or reproducing”.

It is noted that the closest prior art, Kikuchi shows a similar apparatus, which has a controller for calculating compensation for spherical aberration. However Kikuchi fails to disclose a compensating factor for the spherical aberration at each radial position of the disk based on the thickness errors of the transparent substrate detected at various radial positions on the optical disk prior to recording or reproducing information, and causing the spherical aberration compensator to compensate based on the compensation factors during recording or reproducing

11. Applicant's arguments with respect to claims 1-4 and 10-11 have been considered but are moot in view of the new grounds of rejection.

Other prior art cited

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a. Tsuchiya et al. (US. Patent 6,111,832) “Disk discrimination”.

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- b. Hasimoto (US. Patent 6,243,341) "Method of distinguishing".
- c. Harada (US. patent 4,974,220) "Apparatus for positioning".

13. Applicant's amendment necessitated the new grounds of rejection presented in this office action. Accordingly, THIS ACTION IS MADE FINAL. See M.P.E.P. § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. § 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact information

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gautam R. Patel whose telephone number is 571-272-7625. The examiner can normally be reached on Monday through Thursday from 7:30 to 6.

The appropriate fax number for the organization (Group 2600) where this application or proceeding is assigned is 571-273-8300.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Dwayne Bost, who can be reached on (571) 272-7023.

Any inquiry of a general nature or relating to the status of this application should be directed to the Electronic Business Center whose telephone number is 866-217-9197 or the USPTO contact Center telephone number is (800) PTO-9199.



**GAUTAM R. PATEL
PRIMARY EXAMINER**

Gautam R. Patel
Primary Examiner
Group Art Unit 2627

February 26, 2006